

## II.A.4.N.d. Temporarily flooded temperate or subpolar needle-leaved evergreen woodland

### II.A.4.N.d.7. PICEA PUNGENS TEMPORARILY FLOODED WOODLAND ALLIANCE

#### Blue Spruce Temporarily Flooded Woodland Alliance

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#### PICEA PUNGENS / BETULA OCCIDENTALIS WOODLAND

##### Blue Spruce / Water Birch Woodland

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#### ELEMENT CONCEPT

**GLOBAL SUMMARY:** This association is known from Colorado and possibly northern New Mexico. It is a cool, moist riparian woodland occurring in deep, narrow canyons in the foothills and at lower montane elevations of 2200-2700 m. *Betula occidentalis* forms a thick band in deep, subirrigated soils along narrow floodplains, streambanks and terraces, with branches overhanging the stream. Mature *Picea pungens* dominates the canopy (10-60% cover), though *Populus tremuloides* may be present as well. *Betula occidentalis* is always present in the shrub understory (20-40% cover), often joined by *Alnus incana*. Other shrubs include *Salix exigua*, *Salix bebbiana*, and *Cornus sericea*. *Equisetum arvense* is always present in the sparse or dense herbaceous layer. Common associates may include forbs such as *Rudbeckia laciniata*, *Heracleum maximum*, *Fragaria virginiana*, *Mertensia ciliata*, and the graminoid *Calamagrostis canadensis*.

#### ENVIRONMENTAL DESCRIPTION

**USFWS Wetland System:** PALUSTRINE

**Florissant Fossil Beds NM Environment:** This woodland type is found along low to moderately sloped drainages (3–10%) with narrow floodplains. The drainages are oriented to the west and to the north. The substrate within the streambed tends to be rocky or gravelly and covered by herbaceous and woody litter under stands.

**Global Environment:** This association is a cool, moist riparian woodland occurring in deep, narrow canyons in the foothills and at lower montane elevations (2200-2700 m) in Colorado and possibly northern New Mexico. *Betula occidentalis* forms a thick band in deep, subirrigated soils along narrow floodplains, streambanks and terraces.

#### VEGETATION DESCRIPTION

**Florissant Fossil Beds NM Vegetation:** These woodlands are dominated both in the emergent and canopy layers by *Picea pungens* with significant foliar cover provided by *Populus tremuloides*. As emergent trees, these species may reach from 30–35 m in height. In the canopy layer, they are typically in the 20–25 m height class. The subcanopy layer was dominated by these tree species, and also by 8–10 m tall *Betula occidentalis* shrubs. The emergent trees provide approximately 10% foliar cover in sampled stands, while the canopy trees provide approximately 35% (one sampled stand had only 5% canopy cover). Subcanopy trees provide approximately 30% foliar cover, however, one site recorded only 8% foliar cover in the subcanopy. Tree diameters in sampled stands ranged from an average of 15–26 cm for *Populus tremuloides* to 21-24 cm for *Picea pungens*. The largest trees sampled were a 47 cm dbh *Picea pungens* and a 42 cm dbh *Populus tremuloides*. Tall shrubs, dominated by *Betula occidentalis* (6-10 m tall), provided foliar cover from 10–30%, while short shrubs (1–2 m tall), e.g., *Juniperus communis*, *Dasiphora fruticosa*, and *Betula occidentalis*, were estimated to cover approximately 5% of the stand floor. Graminoids provided from 35–50% foliar cover, with *Calamagrostis canadensis*, *Agrostis scabra*, *Bromus inermis*, and *Poa pratensis* the most common grasses observed. Forbs provided approximately 20% foliar cover, with *Thalictrum fendleri*, *Equisetum arvense*, *Cirsium scariosum* (= *Cirsium tioganum*), and *Fragaria virginiana*, the most abundant among many other species. Ground cover was predominantly herbaceous litter, from 85–95% and approximately 15% downed wood.

This woodland will be difficult to interpret separately from Colorado blue spruce forest stands, except for the identified locations. The identified locations represent the only stands of this type observed during the study. The few *Betula occidentalis* shrubs that do appear in the open resemble tall willow species such as *Salix monticola* and will likely be indistinguishable from them on aerial photography.

**Global Vegetation:** *Picea pungens* dominates the canopy with 10-60% cover. Other trees that may be present include *Populus tremuloides* (5-30% cover). The shrub canopy is dominated by *Betula occidentalis* with 20-40% cover. Other shrubs that may be present include *Alnus incana* (10-35% cover), *Salix exigua* (10-30%), *Salix bebbiana* (10%), and *Cornus sericea* (10%). The herbaceous undergrowth can be dense to open. Forb species that may be present include *Rudbeckia laciniata* (1-15%), *Heracleum*

*maximum* (1-15%), *Fragaria virginiana* (1-5%), *Mertensia ciliata* (1-5%), and *Equisetum arvense* (1-10% cover). Graminoid species that may be present include *Calamagrostis canadensis* (1-40%), *Agrostis scabra*, *Bromus inermis*, and *Poa pratensis*

**Global Dynamics:** This plant association appears to be stable and late-seral. In deep, narrow canyons with swift-moving streams and narrow floodplains and benches, *Picea pungens* appears to be a climax riparian species. *Picea pungens* will remain until removed or damaged by a catastrophic flood. *Picea pungens* is a slow-growing, long-lived tree which regenerates from seed (Burns and Honkala 1990a). Seedlings are shallow-rooted and require perennially moist soils for establishment and optimal growth. *Picea pungens* is intermediate in shade tolerance, being somewhat more tolerant than *Pinus ponderosa* or *Pseudotsuga menziesii*, and less tolerant than *Abies lasiocarpa* or *Picea engelmannii*. *Betula occidentalis* can tolerate flooding but not permanent inundation (Hansen et al. 1988). Fire disturbance results in *Betula occidentalis* resprouting and the replacement of this type with an early-seral plant association such as *Populus tremuloides* / *Betula occidentalis*.

#### MOST ABUNDANT SPECIES

##### Florissant Fossil Beds NM

<u>Stratum</u>	<u>Species</u>
Tree	<i>Picea pungens</i> , <i>Populus tremuloides</i>
Shrub	<i>Betula occidentalis</i>
Graminoid	<i>Calamagrostis canadensis</i> , <i>Agrostis scabra</i>
Forb	<i>Equisetum arvense</i> , <i>Achillea millefolium</i>

##### Global

<u>Stratum</u>	<u>Species</u>
Tree	<i>Picea pungens</i> , <i>Populus tremuloides</i>
Shrub	<i>Betula occidentalis</i>
Forb	<i>Equisetum arvense</i>

#### CHARACTERISTIC SPECIES

##### Florissant Fossil Beds NM

<u>Stratum</u>	<u>Species</u>
Tree	<i>Picea pungens</i> , <i>Populus tremuloides</i>
Shrub	<i>Betula occidentalis</i>
Graminoid	<i>Calamagrostis canadensis</i>
Forb	<i>Equisetum arvense</i>

##### Global

<u>Stratum</u>	<u>Species</u>
Tree	<i>Picea pungens</i> , <i>Populus tremuloides</i>
Shrub	<i>Betula occidentalis</i>
Forb	<i>Equisetum arvense</i>

#### OTHER NOTEWORTHY SPECIES

##### Florissant Fossil Beds NM

<u>Stratum</u>	<u>Species</u>
Shrub	<i>Dasiphora fruticosa</i>
Forb	<i>Cirsium scariosum</i>

##### Global

<u>Stratum</u>	<u>Species</u>
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#### GLOBAL SIMILAR ASSOCIATIONS:

- *Pseudotsuga menziesii* / *Betula occidentalis* Woodland (CEGL002639)
- *Picea pungens* / *Equisetum arvense* Woodland (CEGL000389)

#### SYNONYMY:

- Conifer/*Equisetum arvense* community type (Padgett et al. 1989) B

#### GLOBAL STATUS AND CLASSIFICATION COMMENTS

**Global Conservation Status Rank:** G2.

**Global Classification Comments:** Classification is based on 7 quantitative plots. Two closely related communities include *Pseudotsuga menziesii* / *Betula occidentalis* Woodland (CEGL002639), which lacks *Picea pungens* and *Picea pungens* / *Equisetum arvense* Woodland (CEGL000389), where the shrub layer is sparse and does not have significant cover of *Betula occidentalis*. The conifer/*Equisetum arvense* community type (Padgett et al. 1989) has *Picea pungens* and *Betula occidentalis*, but not consistently.

#### ELEMENT DISTRIBUTION

**Florissant Fossil Beds NM Range:** *Picea pungens* / *Betula occidentalis* Woodland is found in a drainage west of the Visitor Center, at the bridge crossing for a footpath (approximately 8365 feet elevation), and also in two mesic drainages in the southeast corner of the monument (approximately 8800 feet elevation and 8900 feet elevation).

**Global Range:** This plant association is known from the central portion of the southern Rockies eastern slope in Colorado and is expected to occur throughout the southern Rocky Mountains in Colorado and probably New Mexico.

**Nations:** US

**States/Provinces:** CO NM?

#### ELEMENT SOURCES

**Florissant Fossil Beds NM Inventory Notes:** Plots 6, 93

**Classification Confidence:** 1    **Identifier:** CEGL002637

**REFERENCES:** Burns and Honkala 1990a, Hansen et al. 1988, Johnston 1987, Kittel et al. 1997, Kittel et al. 1999, Manning and Padgett 1995, Padgett et al. 1989